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10/037,427	01/02/2002	Guenther Heinz	B01-085A	7207

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THE GATES CORPORATION  
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1551 WEWATTA STREET  
DENVER, CO 80202

EXAMINER
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KRUER, STEFAN

ART UNIT	PAPER NUMBER
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3654

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PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	Application No. 10/037,427	Applicant(s) HEINZ ET AL.	
	Examiner Stefan Kruer	Art Unit 3654	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 12 April 2007.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1 - 26 and 28 - 38 is/are pending in the application.
- 4a) Of the above claim(s) 27 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1 - 26 and 28 - 38 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 05 March 2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                                | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                       | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

**Claims 1, 2 and 4 – 7, 13 – 14, 16, 17, 28 and 31** are rejected under 35 U.S.C. 103(a) as being unpatentable over Adifon et al (WO 99/43598) in view of Winninger et al (US 6,033,331).

**Re: Claims 1, 13, 28, and 31**, Adifon et al disclose an elastomeric body (Fig. 7) having a width  $w$  and a thickness  $t$  and having a pulley-engaging surface, the elastomeric body having an aspect ratio greater than one and a tensile cord (726) contained within the elastomeric body and extending longitudinally. However, Adifon et al disclose their pulley-engaging surface and corresponding pulley as having flat profiles.

Winninger et al teach that an elastomeric body (comprising 21, Fig. 1) depicting a ribbed profile of approximately  $90^\circ$  as the pulley-engaging surface, in accompaniment with a pulley having a ribbed profile (61, Fig. 6), to provide harmonic damping and thereby increased service life (Col. 6, Lines 27 - 37).

It would have been obvious to one of ordinary skill in the art to modify the invention of Adifon et al with the teaching of Winninger et al to provide a ribbed pulley-engaging surface, with a rib angle of approximately  $90^\circ$ , to gain the benefits of reduction in noise and enhanced performance from the features above.

**Re: Claims 2, 14 and 29**, Adifon et al disclose a tensile cord (726) comprising a conductive material having a resistance, as inherent to fibers of "...high-carbon steel..." (Pg 7, Line 15).

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**Re: Claims 4 and 16**, Winninger et al teaches a plurality of ribs (23).

**Re: Claims 5 and 17**, Adifon et al disclose a belt (16, Fig. 1) having an end.

**Re: Claim 6**, Adifon et al disclose a plurality of tensile cords (726).

**Claim 7** is rejected under 35 U.S.C. 103(a) as being unpatentable over Adifon et al and Winninger et al, as applied to Claim 3 and 15, respectively, and in further view of White, Jr. et al (US 4,981,462).

Adifon et al and Winninger et al are silent regarding a jacket on a surface opposite the pulley-engaging surface.

Attention is directed to White, Jr. et al who teach their jacket (30) on a surface opposite their pulley-engaging surface as known to the art (Col. 4, Line 20)

It would have been obvious to one of ordinary skill in the art to modify the reference of Adifon et al and Winninger et al with the teaching of White, Jr. et al to provide a jacket on a surface opposite the pulley-engaging surface as known to the art.

**Claims 3, 15, 18, 21 – 22, 26 and 30** are rejected under 35 U.S.C. 103(a) as being unpatentable over Adifon et al in view of Winninger et al, as applied to Claims 2, 14 and 28, and in further view of Suhling (DE 3,934,654) and Siefert (US 3,662,596).

**Re: Claims 3, 15 and 30**, though Adifon et al disclose a tensile cord comprising a conductive material having a resistance, and the resistance of the cord inherently varies through changes in loading, their tensile cord as such is not configured for indicating change in resistance. Furthermore, Winninger et al does not teach tension cords of conductive material.

Attention is directed to Suhling who teaches the incorporation of conductive tensile cords (12a – 12h, Fig. 2) in conventional flat- and toothed suspension belts (11) for the detection of breakage, whereby the integrity of the suspension belt is monitored for replacement; however, Suhling does not indicate a lifting load.

Further consideration is directed towards Siefert who teaches his apparatus for the measurement of "...tension or compression stresses in a metal tire cord embedded in rubberized material of a tire..." as a means to determine the tensile/compressive

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strains of "...reinforcing metal cords..." under different inflation, loading and operating conditions (Col. 1, Line 13).

It would have been obvious to one of ordinary skill in the art to modify the reference Adifon et al and Winninger et al with the teachings of Suhling and Siefert to provide a means to determine the lifting load of suspension belts by monitoring the tension cords for elongation in advance of failure, for purposes of maintenance, safety and optimization.

**Re: Claim 18**, Adifon et al disclose a plurality of tensile cords (726).

**Re: Claims 21 and 22**, Adifon et al disclose their cords (726) "...formed from ... a metallic material, such as thin, high-carbon steel..." (Pg 7, Line 15).

**Re: Claim 26**, Adifon et al disclose an elastomeric body having a width  $w$  and a thickness  $t$  and having a pulley-engaging surface, the elastomeric body having an aspect ratio greater than one and a tensile cord (726) contained within the elastomeric body and extending longitudinally. However, Adifon et al disclose their pulley-engaging surface and corresponding pulley as having flat profiles.

Winninger et al teach their belt having ribbed profile of approximately  $90^\circ$  to engage a pulley having a ribbed profile to enhance harmonic filtering and thereby service life, however Winninger et al are silent regarding the detection of a tensile cord load.

Attention is directed to Suhling who teaches an electric circuit for detecting a tensile cord failure and an interface to provide an alarm signal (audible or visual) and/or to automatically shutdown a hoist motor (Col. 4, line 38). Siefert teaches further his apparatus for measuring of the stress of reinforcing cords and his electrical circuit for indicating the stress under various operating conditions.

It would have been obvious to one of ordinary skill in the art to modify the invention Adifon et al and Winninger et al with the teachings of Suhling and Siefert to reduce drive capacity and noise, as well as to promote safety through monitoring and indication.

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**Claim 19** is rejected under 35 U.S.C. 103(a) as being unpatentable over Adifon et al over Winninger et al, Suhling and Siefert, as applied to Claim 15, and in further view of and White, Jr. et al.

Neither Adifon et al, Winninger et al, Suhling nor Siefert disclose a jacket on a surface opposite the pulley-engaging surface.

Attention is directed to White, Jr. et al who teach their jacket (30) on a surface opposite their pulley-engaging surface as known to the art (Col. 4, Line 20).

It would have been obvious to one of ordinary skill in the art to modify the reference of Adifon et al, Winninger et al, Suhling and Seifert with the teaching of White, Jr. et al to provide a jacket on a surface opposite the pulley-engaging surface as known to the art.

**Claim 20** is rejected under 35 U.S.C. 103(a) as being unpatentable over Adifon et al over Winninger et al, Suhling, Siefert, and White, Jr. et al as applied to Claim 19, and in further view of Stork (US 3,948,113).

Adifon et al, Winninger et al, Suhling and Siefert are silent regarding a jacket and though White et al discloses his jacket as well known in the art, he is silent with regard to its material of construction.

Attention is directed to Stork who teaches his jacket (17,18, Fig. 2 and Col. 3, line 57) comprising "...rubberized woven fabric material such as ... nylon..."

In that nylon is known to the art as an abrasion resistant material, it would have been obvious to one of ordinary skill in the art at the time of the invention to form the jacket of nylon for resistance to wear.

**Claims 8 – 10** are rejected under 35 U.S.C. 103(a) as being unpatentable over Adifon et al over Winninger et al and White, Jr. et al, as applied to Claims 7 and 33, and in further view of Stork.

**Re: Claim 8**, Adifon et al, Winninger et al, Suhling and Siefert are silent regarding a jacket and, though White, Jr. et al disclose their jacket as well known in the art, they are silent with regard to its material of construction.

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Stork, however, teaches his jacket (17,18, Fig. 2 and Col. 3, line 57) comprising "...rubberized woven fabric material such as ... nylon..."

In that nylon is known to the art as an abrasion resistant material, it would have been obvious to one of ordinary skill in the art at the time of the invention to form the jacket of nylon for resistance to wear.

**Re: Claims 9 and 10**, Adifon et al disclose their cords (726) "...formed from ... a metallic material, such as thin, high-carbon steel..." (Pg 7, Line 15).

**Claims 11 and 23** are rejected under 35 U.S.C. 103(a) as being unpatentable over Adifon et al in view of Winninger et al, as applied to Claim 1, and in further view of Siefert.

Adifon et al and Winninger et al do not address the measurement of tensile cord loading. Siefert, however, teaches an electrical circuit (21, 22, 25, Fig. 1) connected to the tensile cord for measuring the stress-strain of metal cords, for various loading conditions. Conversely, based on the measured strains, the tensile loads can be calculated.

It would have been obvious to one of ordinary skill in the art to modify the reference of Adifon et al and McKay with the teachings of Siefert to provide a means to determine the tensile cord load of suspension belts by measuring the stresses of said cords through electrical transducers (P/I), to provide instantaneous feedback for operational oversight and historical data.

**Claims 12 and 24** are rejected under 35 U.S.C. 103(a) as being unpatentable over Adifon et al in view of Winninger et al, as applied to Claims 1 and 13, respectively, and in further view of Suhling.

Adifon et al and McKay do not address the measurement of tensile cord failure. Suhling, however, teaches his tensile cords for the detection of breakage, including his electrical circuit (Fig. 1) for detection of such failure.

It would have been obvious to one of ordinary skill in the art to modify the reference of Adifon et al and Winninger et al, with the teaching of Suhling, to provide a means to monitor the failure of tension members for safety and maintenance.

**Claims 25, 33 – 34 and 36 – 37** are rejected under 35 U.S.C. 103(a) as being unpatentable over Adifon et al in view of Winninger et al, as applied to Claims 1 and 13, and in further view of Stork.

**Re: Claims 25 and 33 – 34**, Adifon et al and McKay are silent regarding a fiber loading of their elastomeric bodies.

Attention is directed to Stork who teaches fiber loading in his elastomeric body to resist the formation of cracks (Col. 4, Line 8).

It would have been obvious to one of ordinary skill in the art to modify the reference of Adifon et al and Winninger et al with the teaching of Stork to extend fibers from the pulley-engaging surface to improve resistance to wear and failure.

**Re: Claims 36 – 37**, Stork teaches, "...rubberized woven fabric material such as cotton, polyester or nylon or combinations thereof..." (Col. 3, Line 58) that forms his "partial tension section" as a "flexible resilient material".

It would have been obvious to one of ordinary skill in the art at the time of the invention to provide a matrix of fibers for the enhancement of tensile and torsional strength properties.

**Claims 35 and 38** are rejected under 35 U.S.C. 103(a) as being unpatentable over Adifon et al in view of Winninger et al, Suhling and Siefert, as applied to Claim 26, and in further view of Stork.

**Re: Claim 35**, Adifon et al, Winninger et al, Suhling and Siefert are silent regarding a fiber loading in their elastomeric bodies.

Attention is directed to Stork who teaches such to resist the formation of cracks.

It would have been obvious to one of ordinary skill in the art to modify the reference of Adifon et al, Winninger et al, Suhling and Siefert with the teaching of Stork to inhibit the formation/propagation of cracks.



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**Re: Claim 38**, Stork teaches, "...rubberized woven fabric material such as cotton, polyester or nylon or combinations thereof..." (Col. 3, Line 58) that forms his "partial tension section" as a "flexible resilient material".

It would have been obvious to one of ordinary skill in the art at the time of the invention to provide a matrix of fibers for the enhancement of tensile and torsional strength properties.

**Claims 1 – 2, 4 – 5, 13 – 14, 16, 17, 28 - 29 and 31** are rejected under 35 U.S.C. 103(a) as being unpatentable over Adifon et al (WO 99/43598) in view of McKay (US 2,221,984).

**Re: Claims 1, 13, 28 and 31**, Adifon et al disclose an elastomeric body (Fig. 7) having a width  $w$  and a thickness  $t$  and having a pulley-engaging surface, the elastomeric body having an aspect ratio greater than one and a tensile cord (726) contained within the elastomeric body and extending longitudinally. However, Adifon et al disclose their pulley-engaging surface and corresponding pulley as having flat profiles.

McKay teaches that an elastomeric body (comprising 10, 11, Fig. 3) having a ribbed profile of approximately  $90^\circ$  as the pulley-engaging surface, in accompaniment with a pulley having a ribbed profile (12), to provide "...a higher coefficient of friction between the belting and the pulley..." for the advantages of greater load carrying without slippage, lower initial tension, and increased service life (Pg. 2, Lines 35 - 49).

It would have been obvious to one of ordinary skill in the art to modify the invention of Adifon et al with the teaching of McKay to provide a ribbed pulley-engaging surface, with a rib angle of approximately  $90^\circ$ , to gain the benefits as noted above for performance and operational efficiencies.

### ***Response to Arguments***

Applicant's arguments filed 12 April 2007 have been fully considered but are not persuasive.

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Upon review of the office action mailed 23 February 2007 it was noted that page 8 was inadvertently omitted from the mailing and has been included verbatim in this office action by the above rejections of **Claim 38** and **Claims 1 – 2, 4 – 5, 13 – 14, 16, 17, 28 - 29 and 31**, the latter over Adifon et al in view of McKay.

As reviewed in the previous office action in response to applicant's arguments that the prior art of reference, particularly as applied to Claim 1, must afford motivation for the combination set forth in the previous office action to provide a rationale of obviousness, thereby stating that the prior art of the previous office action failed to provide such, the prior art of reference of the previous office action, notably Chen et al and White, Jr. et al, respectively teach implicitly and explicitly towards a rib angle of the instant invention whereby the belts modified by the respective inventions provide greater load carrying capacity, noise reduction and service life. Chen et al teach a pulley-engaging surface having a ribbed profile of *approximately* 90° as supported by their disclosure and inherent to belts used with toothed pulleys. Again, the claims of the instant invention fail to stipulate a direction of their ribbed profile, whereby prior art teach belts having ribs both transverse and parallel to the longitudinal direction of the belts.

With respect to the lack of interchangeability of the terms "rib" and "tooth" and the affidavit stating that such terms are known in the art as being unique in form and application, for purpose of prosecution the claim language is subject to a broad, reasonable interpretation. In that both "rib" or "tooth" can be defined as "...an elongated ridge...", as well as that Winninger et al (and other related references with respect to the norms of ISO 9981) describe their ribbed profile (23) as "teeth", and that the "ribbed profile" of Chen et al lies traverse to the "ribbed profile" of White, Jr. et al, Winninger et al and others, is not in dispute of the claim language.

Furthermore, with respect to the use of hindsight reconstruction, the aforementioned prior arts of reference demonstrate repeatedly the benefits of larger angles of ribbed profiles engaging complementary, driven surfaces in order to enhance traction, thereby power transfer, while reducing slippage and noise.

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Additionally, in response to applicant's argument that the examiner's conclusion of obviousness is based upon improper hindsight reasoning, it must be recognized that any judgment on obviousness is in a sense necessarily a reconstruction based upon hindsight reasoning. But so long as it takes into account only knowledge which was within the level of ordinary skill at the time the claimed invention was made, and does not include knowledge gleaned only from the applicant's disclosure, such a reconstruction is proper. See *In re McLaughlin*, 443 F.2d 1392, 170 USPQ 209 (CCPA 1971).

### **Conclusion**

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Kitahama et al (US 4,904,232), Ach (2004/0262087) and Black (GB 2,134,209 A) are cited for references elastomeric bodies having ribbed profiles with rib angles of approximate 90°, *the latter for use in "...haulage and lifts..."*

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Stefan Kruer whose telephone number is 571.272.5913. The examiner can normally be reached on M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gene Crawford can be reached on 571.272.6911. The fax phone number for the organization where this application or proceeding is assigned is 571.273.8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866.217.9197 (toll-free).

SHK

27 April 2007



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SUPERVISORY PATENT EXAMINER